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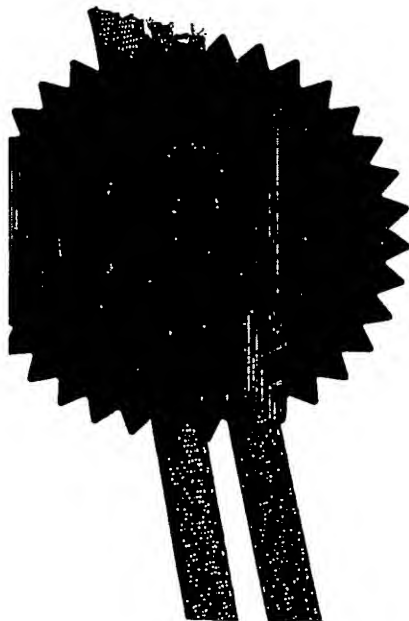
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P. Mahoney

Signed

Dated 4 October 2004



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GB0408013.1

By virtue of a direction given under Section 30 of the Patents Act 1977, the application is proceeding in the name of:-

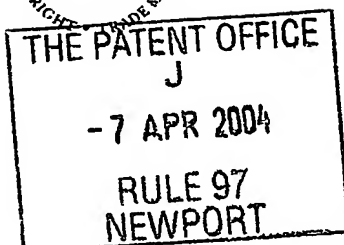
PITCHLINE LIMITED
Incorporated in the United Kingdom
24a FrancisStreet
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United Kingdom
ADP No. 08883118001



08APR04 E887573-1 D02884
P01/7700 0.00-0408013.1 NONE

Request for grant of a patent

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The Patent Office

Cardiff Road
Newport
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1. Your reference

P359902/NBR/MEA

2. Patent application number

(The Patent Office will fill in this part)

0408013.1

7 APR 2004

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Barry Douglas
24a Francis Street
Lurgan
Armagh
BT66 6DN

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

United Kingdom

SECTION 30 (1977 ACT) APPLICATION FILED 28/5/04
8752404001

4. Title of the invention

"Method of marking pitch lines"

5. Name of your agent (if you have one)

Murgitroyd & Company

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Scotland House
165-169 Scotland Street
Glasgow
G5 8PL

Patents ADP number (if you know it)

11980135

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

No

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
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Patents Form 1/77

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Continuation sheets of this form

0

Description

10 12

2

Claim(s)

0

Abstract

0

Drawing(s)

4 1/2

10. If you are also filing any of the following, state how many against each item.

Priority documents

-

Translations of priority documents

-

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

-

Request for preliminary examination and search (Patents Form 9/77)

-

Request for substantive examination (Patents Form 10/77)

-

Any other documents (please specify)

-

11.

I/We request the grant of a patent on the basis of this application.

Signature

Murgitroyd & Company

Date

06 April 2004

Murgitroyd & Company

12. Name and daytime telephone number of person to contact in the United Kingdom

Mark Earnshaw

0141 307 8400

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1 Method of Making Pitch Lines

2

3 The present invention relates to a method of making
4 lines in ground suitable for playing fields and the
5 like, and apparatus and material therefor.

6

7 In the island of Ireland, there are approximately
8 120,000 playing pitches for soccer, gaelic football,
9 cricket and the like. The lines for such pitches are
10 generally formed by a wheeled paint buggy, which
11 introduces a line of paint on the ground through the
12 travel of the front wheel through a paint reservoir.

13

14 However, heavily used pitches often require newly
15 painted lines every week during a playing season,
16 whereas these lines are often 'lost' in the non-
17 playing season as the surrounding grass encroaches,
18 and the pitches are not so regularly mowed. Weed or
19 grass killer can be added to the intended line, but
20 because grass is on either side of each line, the
21 grass and weeds still encroach quickly. It will be
22 appreciated the amount of time taken by groundsmen

1 to keep clearing and repainting pitch lines for
2 120,000 pitches in Ireland alone.

3

4 It is an object of the present invention to provide
5 more permanent lines in the ground.

6

7 Thus, according to one aspect of the present
8 invention, there is provided a method of creating a
9 marked line in a ground surface comprising the steps
10 of:

11 forming one or more slits in the ground surface;
12 inserting a line of material in the or each slit
13 such that part of the material is visible above the
14 ground surface.

15

16 The slit in the ground surface could be formed by
17 any suitable means, one such being a blade,
18 preferably having a sharpened or tapered edge to
19 assist entry into and through the ground surface.

20

21 The ground surface can be any surface on which a
22 slit can easily be formed, one such being earth,
23 more generally grassed earth.

24

25 In one embodiment of the present invention, the
26 method comprises forming between two and four slits,
27 preferably three slits, parallel in the ground, so
28 as to create a broader form of marked line. Where
29 the method involves forming multiple lines, the
30 lines can be any suitable distance apart. Where it
31 is intended generally to provide a single visible
32 marked line in the ground surface, the multiple

1 slits are preferably relatively close, such as 20mm,
2 inter-distant.

3
4 The or each slit created preferably creates little
5 or no visible disturbance on the ground surface
6 other than the marked line. Preferably, the ground
7 surface is rolled after the insertion of the or each
8 line of material.

9
10 The material may be any suitable material, at least
11 part of which is visible above the ground surface.
12 The material may be any suitable colour, white being
13 the commonest colour for many playing pitches.

14
15 Preferably, at least that part of the material
16 visible above the ground surface is partially or at
17 least substantially resistant to sunlight, in
18 particular UV light. In this regard, the material
19 may inherently have a high kilo-langley strength, or
20 be treated so as to have such a high strength.

21
22 In another embodiment of the present invention, the
23 material is at least partly open or has an open
24 structure, through which the ground surface, or
25 anything growing in the ground surface, such as the
26 roots of grass, etc, can extend so as to help anchor
27 the material in the slit either immediately and/or
28 over time.

29
30 According to another embodiment of the present
31 invention, the material is a polymer material such

1 as polypropylene. Such material is widely
2 available.

3
4 One range of polypropylene textile fibre materials
5 are geotextiles. Such materials have moisture
6 resistance so that water has no effect on tensile
7 strength or mechanical properties, extensive
8 chemical resistance, leachate compatibility,
9 biological resistance as polypropylene does not
10 support fungal growth, temperature stability,
11 ultraviolet resistance (preferably by the addition
12 of carbon black or other UV inhibitors), and
13 superior puncture and mullen burst strength (which
14 make them resistant to installation stresses). One
15 supplier of such materials is Don and Low Limited,
16 Forfar, Scotland.

17
18 The material is preferably inserted in the slit by
19 travel on the slit-forming means. More preferably,
20 the material travels on the edge of the slit-forming
21 means towards and into the surface, and is located
22 in the slit as the slit is being formed.

23
24 More preferably, at least a portion of the material
25 which is not inserted into the ground surface
26 comprises a number of separate or discrete fibres,
27 or fibre-like extensions. These together provide
28 the visual form of the line, but are wholly or
29 substantially individual like blades of grass. More
30 preferably, that portion of the material above the
31 ground surface is not damageable by a lawnmower or
32 ground trimmer or the like.

1

2 According to one embodiment of the present
3 invention, the material comprises a woven plastics
4 material, having a central woven portion which is
5 insertable in the ground surface, and extended weft
6 fibres adapted to partially or substantially
7 extended above the ground surface.

8

9 Thus, according to one embodiment of the present
10 invention, there is provided a method of creating a
11 marked line in a ground surface comprising the steps
12 of:

13 locating a slit-forming means having at least one
14 blade on the ground surface, such that a portion of
15 the blade enters the ground surface;
16 locating a fibrous or woven material on each blade;
17 traversing the slit forming means along the path of
18 the intended line;
19 allowing the material to travel with each blade into
20 the ground;
21 leaving the material in each slit formed such that
22 part of the material is visible above the ground
23 surface.

24

25 According to a further embodiment of the present
26 invention, the marked line formed by the present
27 invention is 'permanent', i.e. remains to form a
28 marked line for at least a number of years,
29 expectantly greater than ten years.

30

1 In a second aspect, the present invention extends to
2 a marked line in a ground surface formed by the
3 method and/or material as hereinbefore described.
4

5 According to a third aspect of the present
6 invention, there is provided a marked line forming
7 apparatus, which apparatus comprises one or more
8 rotatable blades, each blade being adapted to form a
9 slit in the ground surface, and adapted to feed
10 around its edge a material for partially inserting
11 into the slit.
12

13 Preferably the apparatus includes a roller following
14 the or each blade, more preferably two or more
15 rollers on which the apparatus traverses along the
16 ground surface.
17

18 According to a fourth aspect of the present
19 invention, there is provided use of a material as
20 hereinbefore defined to make a marked line in a
21 ground surface.
22

23 Preferably the material is a polypropylene or a co-
24 polymer, more preferably a geotextile.
25

26 According to a fifth aspect of the present
27 invention, there is provided a vented fabric
28 material suitable for use in forming a marked line
29 in a ground surface.
30

31 Preferably, the vented fabric material comprises
32 warp and weft fibres, having a core woven section

1 and free weft fibres on each side. The free weft
2 fibres are designed to be that part of the fabric
3 that partially or substantially extends above the
4 ground surface.

5
6 The vented fabric material could be formed from a
7 fully woven material, from which warp fibres are
8 removed from each side to provide 'free' portions of
9 the weft fibres.

10
11 Alternatively, and according to another aspect of
12 the present invention, there is provided a process
13 for forming a vented fabric material as herein
14 before described, wherein lines of weft material are
15 run, and intermittent lines of warp fibres are run
16 thereinbetween, so as to form portions of woven
17 material and portions of weft fibre material only.

18
19 Such a material can then be cut along each weft
20 fibre portion, to create a vented fabric material
21 having a woven core portion, and free weft fibres on
22 each side.

23
24 The process provides periodic weaving, or non-
25 weaving, periods.

26
27 Embodiments of the present invention will now be
28 described by way of example only, and with reference
29 to the accompanying drawings in which:
30

1 Figure 1 is a marked line in a grassy earth surface
2 according to one embodiment of the present
3 invention;
4 Figures 2a and 2b are diagrammatic cross-sections of
5 the ground in Figure 1 from different directions;
6 Figure 3 is a perspective part view of apparatus
7 according to another embodiment of the present
8 invention;
9 Figure 4 is a schematic part-cross sectional side
10 view of part of the apparatus in Figure 3 in use;
11 Figure 5 is a schematic plan view of a vented fabric
12 method of production according to another embodiment
13 of the present invention; and
14 Figure 6 is a section of vented fabric prepared from
15 the process of Figure 5.
16 Figure 7 is another representation of Figure 6.
17
18 Referring to the drawings, Figure 1 shows a marked
19 line 2 in a grassy earth-surface 4 as an
20 illustration of the effect of the present invention.
21 The marked line could be used as a pitch line for a
22 soccer or gaelic football pitch.
23
24 Figure 2a shows a cross sectional view through the
25 ground 4 across the path of the marked line 2,
26 showing the location of three lines 6 of white
27 material in the ground surface 4. Figurative grass
28 8 is shown each side of the line 2, although the
29 relative heights of the grass 8 and the parts of the
30 material above the ground surface are for
31 illustrative purposes only.
32

1 It is possible that the grass 8 will re-grow around
2 the visible part of the material. However, material
3 such as polypropylene is not cuttable by most if not
4 all types of lawnmowers, especially those lawnmowers
5 used generally to mow playing surfaces. Thus, it is
6 not a problem if the grass grows in amongst the
7 marked white lines 6, as mowing of the playing
8 surface will reduce it to the same or a lower height
9 of the visible polypropylene fibres, maintaining the
10 visibility of the white lines 6.

11
12 Figure 2b shows a longitudinal cross section of the
13 marked line 2 of Figure 1, showing the material
14 having a woven section 10 which is within the ground
15 surface 4, and the free fibres extending therefrom,
16 the ends of which 12 are visible above the ground
17 surface.

18
19 That part of the material above the ground surface 4
20 is labelled in Figures 2a and 2b as 20, and that
21 part which is below the ground surface 4 is labelled
22 22. The combined parts of the material 20, 22 can
23 be seen as folded, which folding is arranged to fit
24 over the edge of a blade as hereinafter described.

25
26 Figure 3 shows apparatus comprising three blades 30.
27 The blades are rotatable about separate axes 32,
28 parallel, and are offset to be approximately 20mm
29 apart, which distance is adjustable.

30
31 Figure 4 shows schematically the three blades 30,
32 generally housed within a housing 34. At the

1 forward and rear ends of the housing 34 are round
2 surface rollers 36.

3

4 Each blade 30 forms a slit in the ground surface 4
5 by traversing the ground surface 4, eg by being
6 pulled by a tractor through linkage 38. As each
7 blade 30 rotates about its axis 32, it cuts into the
8 ground surface 4.

9

10 Feeding onto each blade 30 (shown only once in
11 Figure 4), is a folded woven polypropylene material
12 approximately 20cm wide, having a central woven band
13 approximately 7-8cm wide, and free weft fibres
14 extending from each side of the central band. The
15 fully woven form of this material is common in the
16 art, and used for forming bales or agricultural
17 flexible sacks and the like.

18

19 As the blades 30 rotate, the folded material 40
20 follows the edge of the blade 30 and is therefore
21 fed into the ground surface 4 as the blade 30 enters
22 also. The force of the blade 30 then locates the
23 base of the material 40 in the slit formed, which
24 material 40 then remains in the ground surface 4
25 whilst the edge of the blade 30 exits the ground
26 surface 4. The free ends 42 of the material 40 are
27 however now visible whilst being securely retained
28 in the ground surface 4 as the ground folds back
29 around the remaining part of the material and holds
30 it in place.

31

1 Any ground disturbance caused by the slits is rolled
2 by the rear roller 36.

3
4 In order to ensure straight lines, the apparatus-
5 pulling means such as the tractor, could be laser
6 guided by a laser set at the end of the intended
7 path of the line, whose beam hits a target on or
8 near the apparatus, which target is noted by the
9 user.

10
11 Figure 5 shows a process for forming a vented fabric
12 material as used in Figures 2a and 2b, etc wherein
13 lines of weft threads 52 are constantly run, whilst
14 only intermittent lines of warp threads 50 are run
15 thereinbetween; the line of production being towards
16 arrow A.

17
18 Once cut along the dashed line 54, two pieces of
19 vented fabric material 56 as shown in Figures 6 and
20 7 are formed, each of which is useable for the
21 method and with the apparatus hereinbefore
22 described. That is the extended or free weft
23 threads 58 are the 'free fibres' shown in Figures 1,
24 2a and 2b, and the woven core 60 is the woven
25 section 10, once the piece 56 is folded
26 longitudinally in half.

27
28 The present invention has been found to lay the
29 complete lines of the football pitch within a day,
30 which lines then need no further maintenance or
31 repair. Moreover, the free fibres 20 extending
32 above the ground surface will not trip or catch any

1 player, such as by his boots studs. Moreover, the
2 free fibres 20 cannot be cut by a lawnmower such
3 that mowing any playing pitch is not a problem.

4

5 The present invention provides a simple but
6 effective means of providing marked lines, which
7 lines will remain, and need no further repair or
8 maintenance for a number of years, while still
9 providing the same visual effect as painted line

1/4

Fig 3

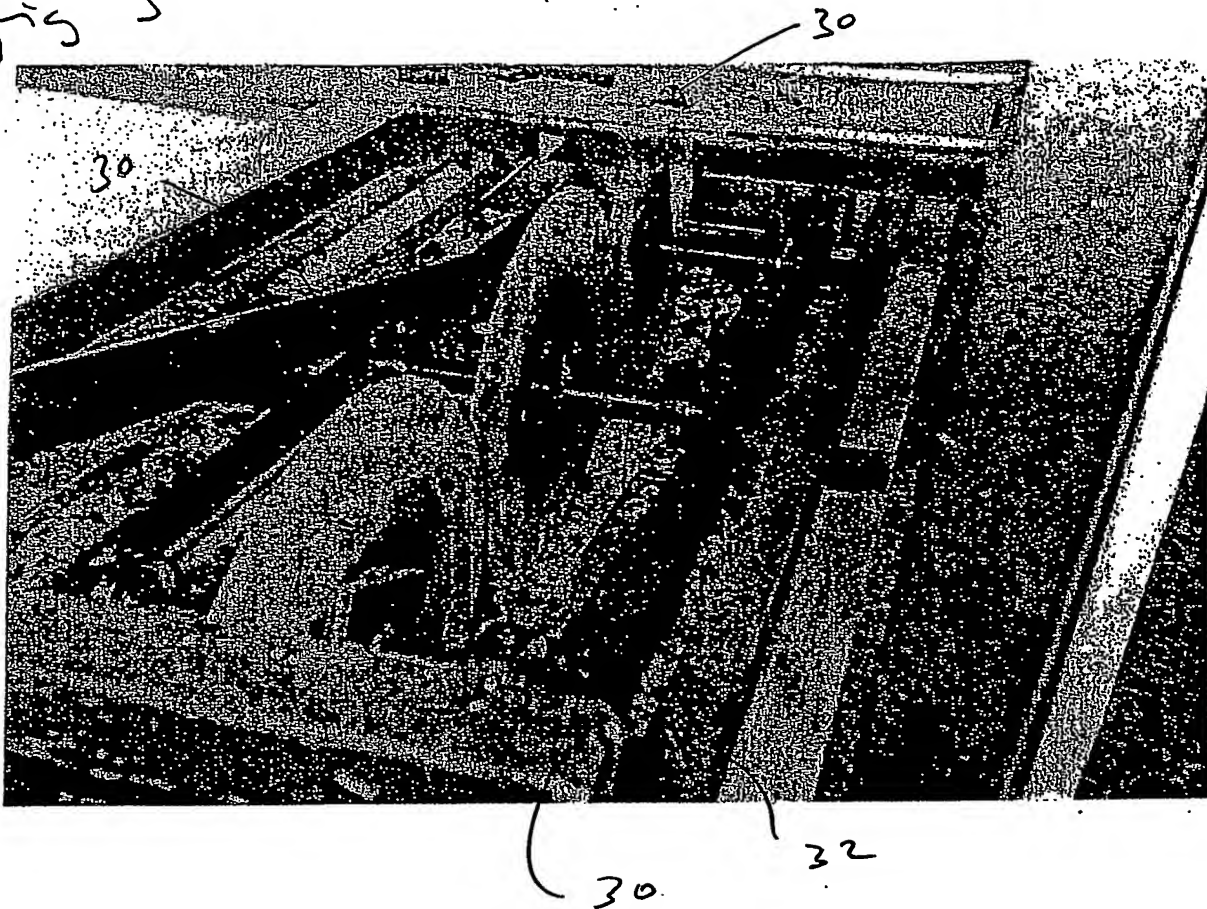
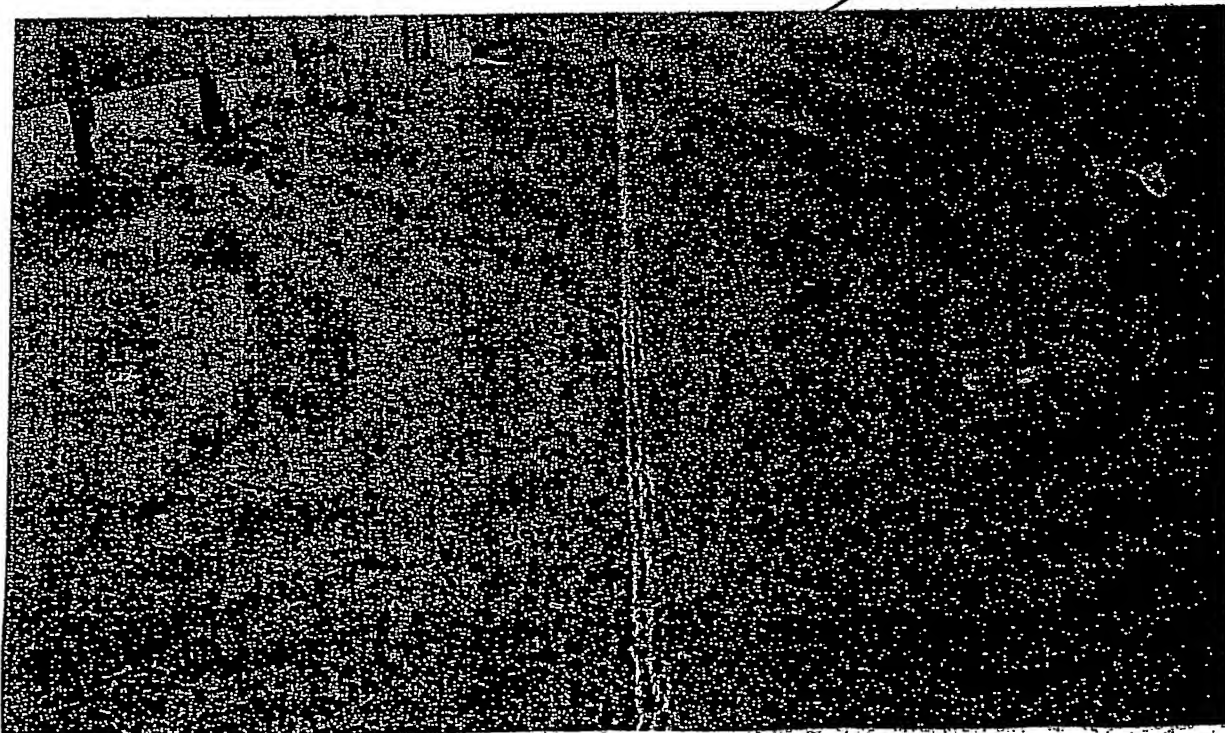


Fig 1



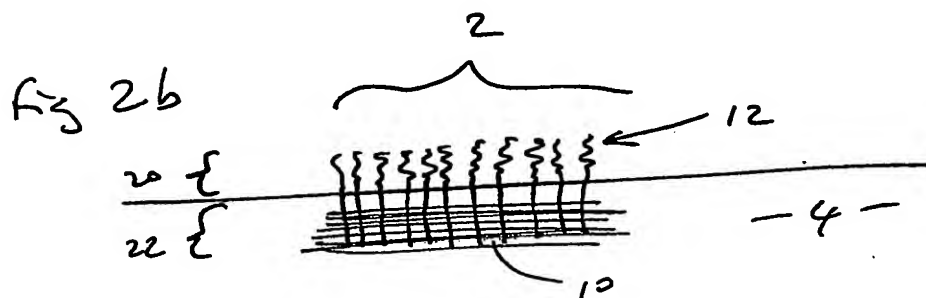
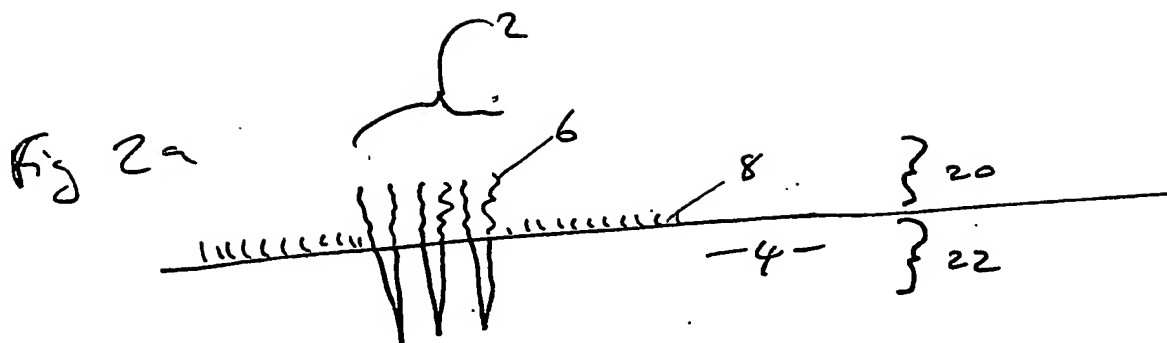
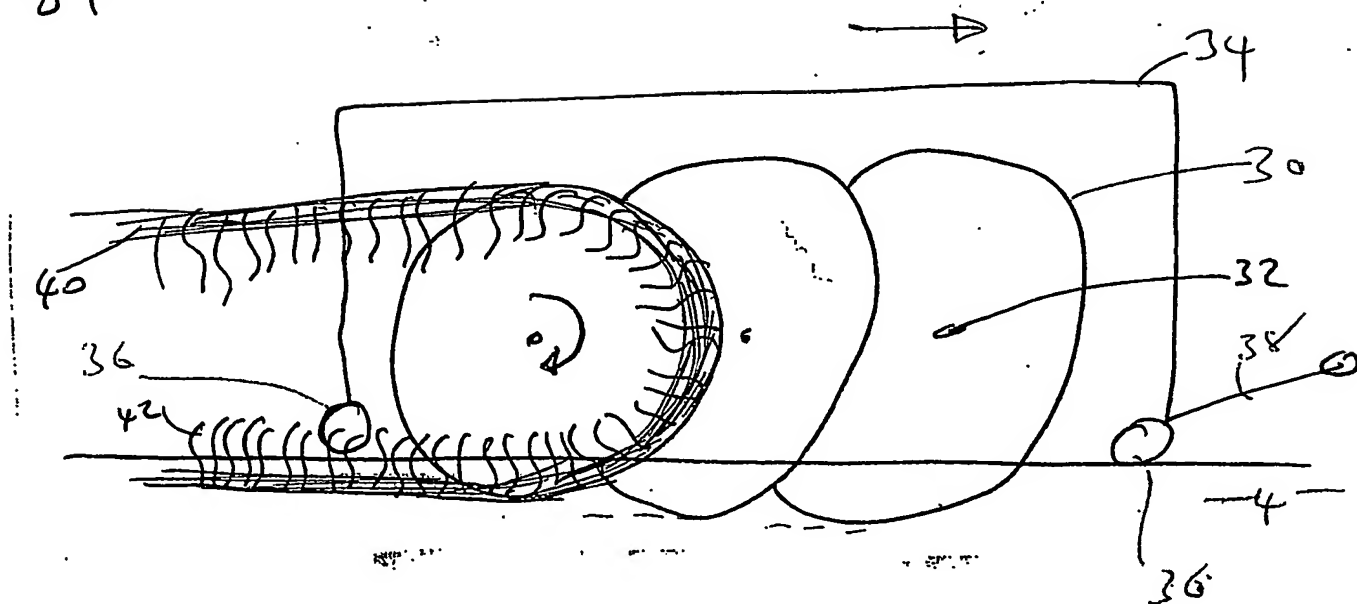


Fig 4



3/4

fig 5

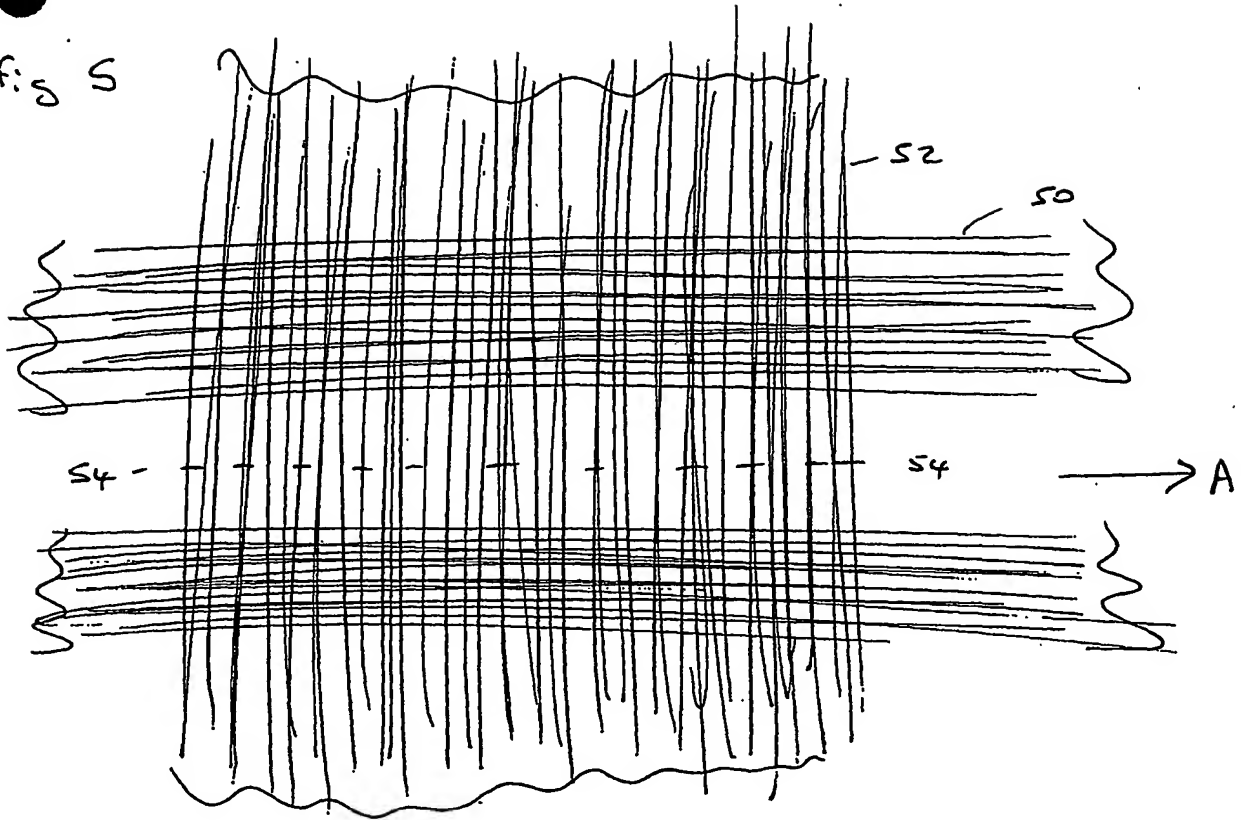
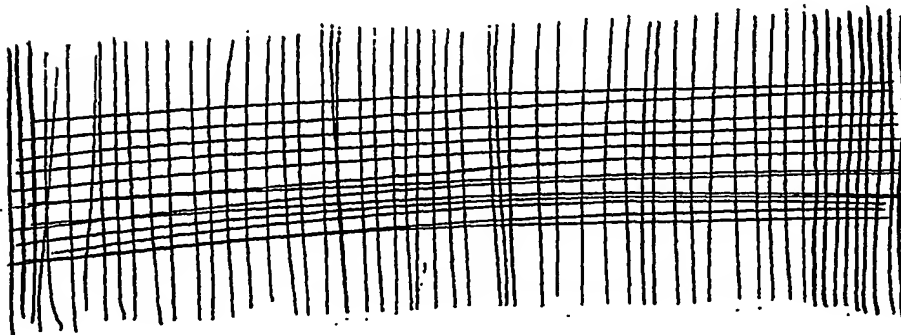


fig 6

fig 5



} 58
} 60
} 58

fig 7

158

160

158

